

UNITED STATES OF AMERICA  
DEPARTMENT OF TRANSPORTATION  
FEDERAL AVIATION ADMINISTRATION  
RENTON, WASHINGTON 98055-4056

In the matter of the petition of

**British Aerospace Regional Aircraft**

for an exemption from 14 CFR  
§§ 25.562(c)(5) and 25.785(a)

**Regulatory Docket No. 27001**

**GRANT OF EXEMPTION**

By letter AWP/J41/101/980028 dated January 28, 1998, M. J. Tuson, Airworthiness Manager, British Aerospace Regional Aircraft, Prestwick International Airport, Ayrshire KA9 2RW, Scotland, petitioned for an amendment to Exemption 5587E regarding the Head Injury Criterion (HIC) of 14 CFR §§ 25.562(c)(5) and 25.785(a), for front row passenger seating in Jetstream Series 4100 airplanes, to allow retrofit of airplanes already delivered. The existing exemption expires on March 31, 1998.

**Sections of the FAR affected:**

Section 25.785(a) requires that each seat, berth, safety belt, harness, and adjacent part of the airplane at each station designated as occupiable during takeoff and landing must be designed so that a person making proper use of those facilities will not suffer serious injury in an emergency landing as a result of inertia forces specified in §§ 25.561 and 25.562.

Section 25.562(c)(5) requires that each occupant must be protected from serious head injury under the conditions prescribed in paragraph (b) of this section. Where head contact with seats or other structure can occur, protection must be provided so that the head impact does not exceed a Head Impact Criterion (HIC) of 1,000 units. The level of HIC is defined by the equation:

$$HIC = \left[ (t_2 - t_1) \left[ \frac{1}{(t_2 - t_1)} \int_{t_1}^{t_2} a(t) dt \right]^{2.5} \right]_{\max}$$

**ANM-98-017-E**

**The petitioner's supportive information is as follows:**

In accordance with the terms of Exemption 5587E, BAe has submitted a retrofit schedule for airplanes delivered under the terms of previous amendments of this exemption. BAe proposes a retrofit schedule as follows:

1998: 12 Airplanes

1999: 25 Airplanes

2000: 20 Airplanes

Under this schedule, all airplanes would be brought into compliance no later than the end of 2000. Logistical arrangements with individual operators to avoid groundings will need to be refined. The most difficult logistical issue is the reworking of sidewall panels, which requires removal and rework on an exchange basis. There are several types of panels, which affects the rate of implementation.

The FAA finds, for good cause, that action on this petition should not be delayed by publication and comment procedures for the following reasons: (1) a grant of exemption would not set a precedent in that it establishes a retrofit time for compliance with a requirement and not permanent relief from the requirement; and (2) a delay in acting on the petition would be disruptive to the flying public and create a major economic burden on the manufacturer and operators.

**The FAA's analysis/summary is as follows:**

The FAA notes that BAe has met the terms of Exemption 5587E by submitting a schedule for retrofit prior to the deadline imposed. This schedule would allow an approximately 2 1/2 year implementation period to bring airplanes into compliance. It appears that the pacing item for this retrofit is the sidewall panel, which is intended to be reworked, and provided on a replacement/exchange basis. This involves not only the operators of the airplanes, but also the manufacturer.

In granting previous amendments to this exemption, the FAA gave much consideration to BAe's stated intention to utilize airbags. BAe has now decided to offer upper torso restraints as the primary means of compliance, with the airbag as a potential option. In granting Exemption 5587E, the FAA noted that upper torso restraints were considered a viable option, and commercial resistance would not be considered a justification for further exemption. Since upper torso restraints are now the means of compliance of choice, the FAA considers that a fairly expedited retrofit schedule should be possible. Nonetheless, the FAA recognizes that the implementation requirements are not trivial and does not want to force airplane groundings in order to achieve compliance.

In light of the extensiveness of the modification, therefore, the FAA agrees with the schedule proposed by the petitioner. From a legal standpoint, the airworthiness certificates of airplanes not in compliance after December 31, 2000, are no longer effective.

In consideration of the foregoing, I find that a grant of exemption is in the public interest, and will not significantly affect the overall level of safety provided by the regulations. Therefore, pursuant to the authority contained in 49 US 40113 and 44701, formerly §§ 313(a) and 601(c) of the Federal Aviation Act of 1958 as amended, delegated to me by the Administrator (14 CFR 11.53), the petition of Jetstream Aircraft Limited for an extension to Exemption 5587 regarding the HIC requirements of §§ 25.562(c)(5) and 25.785(a) of the FAR, for front row passenger seats on Jetstream Series 4100 airplanes, is granted until December 31, 2000, with the following provision:

1. This extension applies only to airplanes delivered prior to September 30, 1997.

Issued in Renton, Washington, on March 31, 1998

Darrell M. Pederson  
Acting Manager,  
Transport Airplane Directorate,  
Aircraft Certification Service, ANM-100